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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

December 13, 2011

TO: Internal File

THRU: April Abate, Team Lead QAC
2.1.2012

FROM: Priscilla Burton, Soils Reclamation Specialist

RE: Midterm Permit Review, Savage Industries Inc., Savage Coal Terminal C/007/0022, Task ID #3953

SUMMARY:

The mid-term review commenced on November 23, 2011. The following information is requested in accordance with midterm review Item A:

R645-301-121.100, Inspection Reports indicate that refuse or high-ash coal material haulage varies from none at all during the wet winter months (Inspection Report # 2608), to more than 320 Tons/day (8 truck loads), during the dry, summer months (Inspection Report #2832). Figure 1 of Attach.1 of App. 5-1 illustrates the Refuse Pile removal plan for the years 2000- 2004. An update to Figure 1 should be provided to project removal from the refuse pile in the current year and over the remainder of permit term, with current pile topography shown and the volume of refuse noted on the Figure. In addition, please update the language in Appendix 5-1 under Part III. Timing. This section contains out of date language that final removal of the refuse pile will be completed by 2004.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Savage Coal Terminal soils were surveyed in 1970 by the USDA Soil Conservation Service and again in 1980 by James P. Walsh and Associates (MRP, Section 222.100). The survey is referred to but not included with the plan. The original survey cannot be located.

The following pedons were described by Mr. James Walsh at the loadout site: Billings Series; Chipeta Series; Disturbed Lands; Killpack Series; Killpack Series High Water Table Variant; Saltair Series (Section 222.300 and in Table 2-4) All are gypsiferous soils formed from Mancos shale.

The 1980 chemical analysis of each soil type is provided in Table 2-5. Successive chemical data is provided in Appendix 2-3. General depth of suitable topsoil salvage from each soil type is described in Table 2-8, although the MRP provides a commitment to have a qualified soil scientist on site during soil salvage operations (Section 230).

Appendix 2-3 Plate 2-4 provides a pre-disturbance soils map for development at the site after the year 2000.

Findings:

The information provided meets the requirements of soil resource description as required by the Utah Coal Rules.

**OPERATION PLAN
TOPSOIL AND SUBSOIL**

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Plate 5-2 Surface Facility Map illustrates a topsoil and subsoil stockpile location adjacent to the Savage office. The construction of the topsoil pile is described in Sec. 231.100. The volume of soil recovered prior to settling pond construction in 2006 was 13,028 yd³. After settling pond construction in 2006, the total volume of stored topsoil is 62,314 yd³. (Table 2-6 Section 231.400 summarizes the volume of material stored in three stockpiles at the Savage Coal Terminal. Plate 2-2 and Appendix 2-1 provides as-built information for the subsoil/topsoil stockpile created in 2002. Cross sections and volumes are provided to arrive at 49,285.93 yd³. Table 2-6 also records a figure of 49,286 cubic yards for the combined yardage of topsoil salvaged from the coal stockpile/truck loop expansion and the topsoil that had been previously salvaged and stockpiled at the site. Plate 2-3 provides as-built information for the settling pond subsoil (6,514 yd³) and topsoil (6,514 yd³) storage piles.

In 2006, the settling ponds were constructed and only the soils represented by SP1 and SP2 (Killpack and Billings Silty Clay, moist) were salvaged (mapping units KMB and BIBM listed on Plate 2-4). Topsoil and subsoil (12 inch depth of each) were salvaged, stockpiled and seeded in the fall of 2006 (Table 2-6 and Section 231.100, p. 27). Billings Silty Clay (BiBe), soils with extreme SAR values were excluded from salvage during the settling pond construction (represented by SP3 on baseline soils Map 2-4). Based upon the laboratory analysis in App. 2-3, the average SAR value of the salvaged topsoils should be 4.65. The average SAR value of the salvaged subsoils should be 13.04. These topsoil and subsoil piles were treated with potassium fertilizer and two biological enhancements described in Section 231.100, pp. 28 and 29 and seeded in October 2006 using the mix described in Table 5-1.

During the 2002 construction of the loadout expansion (directly opposite the office), there were 8,002 bank cubic yards of topsoil stripped from 9.92 acres of Chipeta soils and 4,138 bank cubic yards of topsoil stripped from the 3.42 acres of Killpack soils for a total of 12,298 cubic yards. Stripping depth was six inches for Chipeta and nine inches for Killpack. As built information indicated the volume of soil recovered in 2002 was 13,028 yd³. Table 5-1 Temporary seed mix was applied to the topsoil/subsoil stockpile created in 2002 from the truck loadout expansion.

The same Temporary mix (Table 5-1) was also used last year on a berm behind the pumphouse and after one year there are winterfat and atriplex coming up in this location.

After 7 years, the growth on the loadout expansion stockpile (coal stockpile/coal loop area) is showing diversity in life form and adequate coverage. However, after 3 years, in 2009, the settling pond expansion subsoil stockpile had numerous saltbush shrubs in the bottom of deep pocks, but the topsoil pile was devoid of vegetation.

The Permittee reseeded the settling pond expansion topsoil stockpile in the fall 2009, using a simpler, new mix that consists of two wheat grass species, yellow sweetclover and alfalfa. The list of seed used in supplemental reseeding on the topsoil stockpile is provided at a

footnote to Table 5-1 Temporary Seed Mix.

Findings:

The information provided meets the requirements of topsoil protection as required by the Utah Coal Rules.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Refuse Piles

A permanent refuse pile (Section 514.100) with MSHA # 1211-UT-09-01444-01 is located on Map 5-2. [The refuse pile remained dormant until June of 2005.] As noted in section 536, the refuse pile may be re-mined for use at the Sunnyside Co-generation plant (Appendix 5-1) or may be taken off-site, cleaned using a patented air cleaning technology and the resulting higher BTU product blended with coals stored at the Savage site for shipment to cement plants was approved (Appendix 5-2). The reject from this latter enhancement process is returned to the MSHA refuse pile for final disposal.

2011 Inspection Reports indicate that refuse or high-ash coal material haulage varies from none at all during the wet winter months (Inspection Report # 2608), to more than 320 Tons/day (8 truck loads), during the dry, summer months (Inspection Report #2832). Figure 1 of Attach.1 of App. 5-1 illustrates the Refuse Pile removal plan for the years 2000- 2004. Figure 1 should be updated to project current year and remainder of permit term, with current pile topography and the estimated volume of refuse in the pile noted on the Figure.

Section 536 relates that the coal processing plant was restarted in 2006, after being idle since 1984. In 2006, Savage Industries negotiated a contract with an outside company to wash high ash coal. Coal processing waste generated by this activity was approved for temporary storage at the Savage Coal Terminal in the permitted MSHA refuse pile. The wash plant waste from this process may be stored temporarily at the MSHA refuse pile site, but will be returned to the outside company for final burial. The coal processing material will be stored for a maximum of one year prior to return shipment to the outside company's waste rock permanent disposal facility.

Findings:

The following information is requested in accordance with mid-term review letter Item A and:

R645-301-121.100, Inspection Reports indicate that refuse or high-ash coal material haulage varies from none at all during the wet winter months (Inspection Report # 2608), to more than 320 Tons/day (8 truck loads), during the dry, summer months (Inspection Report #2832). Figure 1 of Attach.1 of App. 5-1 illustrates the Refuse Pile removal plan for the years 2000- 2004. An update to Figure 1 should be provided to project removal from the refuse pile in the current year and over the remainder of permit term, with current pile topography shown and the volume of refuse noted on the Figure. In addition, please update the language in Appendix 5-1 under Part III. Timing. This section contains out of date language that final removal of the refuse pile will be completed by 2004.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid- and Toxic-Forming Materials and Underground Development Waste

Section 536 refers to Appendix 5-1 and 5-2 for laboratory analysis of coal mine waste. Appendix 5-1 includes Attachment 1 which is the quality analysis of the high ash coal waste. The 2010 Annual Report states in Appendix A that that high-ash coal waste was removed from the West and North ends of the refuse pile and that sediment pond clean out fines were placed in the refuse pile. 2011 Inspection Reports confirm that removal continues from the pile.

Appendix 5-2 B.T.U. Resource Recovery Plan for Refuse Material describes transfer of refuse to a cleaning facility and sampling of processed "reject" generated by the cleaning facility (i.e. COVOL), prior to its return to the Savage Refuse pile. Acid/toxic parameters will be analyzed on every 5,000 Tons of waste returned to the site. There was no return of processed waste to the pile during 2010 and no analyses were provided. COVOL has been idle in 2011.

The temporary storage of coal processing waste from the wash plant facility requires the sampling of every 5000 tons of refuse for analysis of acid and toxic potential if the material is to be stored in excess of thirty days (Section 536). The analytical results of this sampling will be forwarded to the Division on a quarterly basis, as well as provided with the Annual Report for the Savage Coal Terminal. No analyses of temporarily stored material were provided in 2011, indicating no long term storage of wash plant waste.

Findings:

The information provided meets the requirement of the Utah Coal Rules.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Soil preparation and redistribution is described in Section 542.200. Currently, there are 132.5 acres disturbed (Table 2-9) and 62,314 cubic yards of topsoil and subsoil stored at the site (Sec. 231.400).

Currently the mass balance for the mine site is as follows:

- Topsoil available = 62,314 yd³ stockpiled topsoil and subsoil.
- Disturbed area = 132.5 acres
- Post Law Disturbance = 55.3 acres
- Topsoil required (Post Law) = 44,617 yd³, reflecting the commitment to re-apply six inches of topsoil to post-law areas
- Max area for 6" redistribution = 77.25 acres, reflecting the area that could be covered to a depth of six inches by the stored soil.

Commitments for deep chiseling and soil testing during final reclamation are found in Section 231.300. The consultant's recommendation on page 5 of Appendix 2-3 is to improve the high clay soils by adding waste rock from the coal wash process and sewage sludge or other organic amendments.

Findings:

The information provided meets the requirements of the Utah Coal Rules.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Establishing vegetation at the site will be difficult due to lack of water and saline/sodic soils. A case in point is the vegetation establishment on the topsoil and subsoil stockpiles. Initially, topsoil and subsoil stockpiles were smoothly graded and tilled to a depth of 5 inches. Slopes greater than 20% were prepared using a crawler tractor at right angles to the slope to leave grouser tracks parallel to the slope. There was 2000 lbs/acre hay mulch incorporated into

the surface with roughening and a temporary seed mix applied (Table 5-1) and treatment with 2,000 lbs/ac of wood fiber mulch and 60 lbs/acre of tackifier (prior to reformatting in 2008, these treatments were documented on page 3-54, Section 3.5.2, this information was removed from Section 541.100 and placed in Section 231.100 of the 2009 reformatted plan. Steep sided, almost conical piles were ineffective for establishing vegetation and were abandoned with reconstruction of the topsoil/subsoil stockpile in 2002 and construction of the 2006 settling pond stockpiles.

The mean annual precipitation for the site is about 10 inches (Section 724.200 and Table 7-15). Section 542.200 describes seeding after September 1 to allow for optimum growing conditions. The site receives most of its precipitation from August through September, making it a candidate for July seeding of warm season species. A summer (July) seeding is acceptable because several of the species are warm season and summer seeding will allow their establishment. If seeded in the fall, warm season species usually cannot compete with the other weed and seeded species and will not be seen. Past experience with the soils at this site indicates that seeding must immediately follow topsoiling to allow good seed/soil contact, regardless of season.

Section 542.200, Recontouring, provides a commitment to stabilize rills and gullies.

Findings:

The information provided meets the requirements of the Utah Coal Rules.

RECOMMENDATIONS:

The MRP meets the requirements of the Coal Rules. A site visit in late spring/early summer is recommended to observe the condition of the topsoil stockpiles.